IN THE SPECIFICATION:

Please amend paragraph [0001] as follows:

[0001] This application is a Continuation in Part of U.S. Patent Application No. 10/153,219, now U.S. Patent No. 7,452,705, which claims priority to U.S. Provisional Patent Application Serial No. 60/292,845, filed May 22, 2001. This application also claims priority to U.S. Provisional Patent Application Serial No. 60/436,062 filed December 23, 2002. The entire disclosure of all priority applications is specifically incorporated herein by reference.

Please amend paragraph [0043] as follows:

[0043] FIG. 2A and FIG. 2B--N4 vRNAP and generation of mini-vRNAP. FIG. 2A shows a schematic of the N4 vRNAP protein with three motifs: the T/DxxGR motif (SEQ ID NO:44) found in DNA-dependent polymerases, the P-loop, an ATP/GTP-binding motif present in some nucleotide-binding proteins, and motif B ($Rx_3Kx_{6-7}YG$) (SEQ ID NO:45), one of three motifs common to the Pol I and Pol α DNA polymerases and the T7-like RNA polymerases. FIG. 2B shows the mini-vRNAP.

Please amend paragraph [0063] as follows:

[0063] FIGS. 22A+B --An embodiment that uses coupled target-dependent rolling circle replication and rolling circle transcription to amplify the amount of transcription product obtained. The copies of the target sequence in the rolling circle replication product are identical to the target sequence in the sample and provide additional sites for annealing and ligation of bipartite target probes in order to obtain more circular transcription substrates. Ligation of the bipartite target probe catenates the circular transcription substrate to the rolling circle replication product comprising the replicated target sequence. The catenated circular transcription substrates must be released from the rolling circle replication product to achieve efficient rolling circle transcription. The method for releasing the catenated circular transcription substrates illustrated

here is to include a quantity ofdUTP in the rolling circle replication reaction mix in addition to dTTP so that a dUMP residue is incorporated randomly about every 100-400 nucleotides. Uracil-N-glycosylase and endonuclease N, which cleave the DNA strand wherever dUMP is incorporated, is also included in the reaction mixture. Once the rolling circle replication product is cleaved so that, on average, most of the replicated target sequences are within about 150-200 nucleotides from a free 3'-end, the catenated circular transcription substrates will be released during rolling circle transcription.

Please amend paragraph [0078] as follows:

[0078] Sequencing of the N4 vRNAP gene revealed an ORF coding for a protein 3,500 amino acids in length (SEQ ID NO:1-2). Inspection of the sequence revealed no extensive homology to either the multisubunit or the T7-like families of RNA polymerases. However, three motifs are present (FIG. 2A): the T/DxxGR motif (SEQ ID NO:44) found in DNA-dependent polymerases, and Motif B ($Rx_3Kx_{6-7}YG$) (SEQ ID NO:45), one of three motifs common to the Pol I and Pol α DNA polymerases and the T7-1ike RNA polymerases.

Please amend paragraph [00184] as follows:

[00184] Host cells may be derived from prokaryotes or eukaryotes, including yeast cells, insect cells, and mammalian cells, depending upon whether the desired result is replication of the vector or expression of part or all of the vector-encoded nucleic acid sequences. Numerous cell lines and cultures are available for use as a host cell, and they can be obtained through the American Type Culture Collection (ATCC), which is an organization that serves as an archive for living cultures and genetic materials ~~(www.atcc.org)~~. An appropriate host can be determined by one of skill in the art based on the vector backbone and the desired result. A plasmid or cosmid, for example, can be introduced into a prokaryotic host cell for replication of many vector copies. Bacterial cells used as host cells for vector replication and/or expression include DH5a, BL 21, JMI09, and KC8, as well as a number of commercially available bacterial hosts such as SURE® Competent Cells and SOLOPACK Gold Cells (STRATAGENE®, La Jolla, Calif.).

Alternatively, bacterial cells such as E. coli LE392 could be used as host cells. Appropriate yeast cells include *Saccharomyces cerevisiae*, *Saccharomyces pombe*, and *Pichia pastoris*.

Please amend paragraph [00231] as follows:

[00231] A tag may be used for protein or peptide purification and detection such as hexahistidine (6-His, HHHHHH) (SEQ ID NO:46), FLAG (DYKDDDDK) (SEQ ID NO:47), hemaglutinin (HA, YPYDVPDYA) (SEQ ID NO:48) and c-myc (EQKLISEEDL) (SEQ ID NO:49). Other tags also have been generated, most of which are very small, comprising only a few amino acids, and are therefore likely to have little to no effect on the conformation of the mature protein or peptide. These small tags do not require any special conformation to be recognized by antibodies. Systems for protein purification using these tags include NTA resin (6-His) or the FLAG fusion system marketed by IBI (FLAG) where the fusion protein is affinity-purified on an antibody column.

Please amend paragraph [00262] as follows:

[00262] Many donor/acceptor dye pairs known in the art and may be used in the present invention. These include, for example, fluorescein isothiocyanate (FITC)/tetramethylrhodamine isothiocyanate (TRITC), FITC/~~Texas Red~~ TEXAS RED (Molecular Probes), FITC/N-hydroxysuccinimidyl I-pyrenebutyrate (pYB), FITC/eosin isothiocyanate (EITC), N-hydroxysuccinimidyl I-pyrenesulfonate (pYS)/FITC, FITC Rhodamine X, FITC/tetramethylrhodamine (TAMRA), and others. The selection of a particular donor/acceptor fluorophore pair is not critical. For energy transfer quenching mechanisms, it is only necessary that the emission wavelengths of the donor fluorophore overlap the excitation wavelengths of the acceptor, i.e., there must be sufficient spectral overlap between the two dyes to allow efficient energy transfer, charge transfer or fluorescence quenching. P-(dimethyl aminophenylazo) benzoic acid (DABCYL) is a non-fluorescent acceptor dye which effectively quenches fluorescence from an adjacent fluorophore, e.g., fluorescein or 5-(2'-aminoethyl) aminonaphthalene (EDANS). Any dye pair which produces fluorescence quenching in the

detector nucleic acids of the invention are suitable for use in the methods of the invention, regardless of the mechanism by which quenching occurs. Terminal and internal labeling methods are both known in the art and may be routinely used to link the donor and acceptor dyes at their respective sites in the detector nucleic acid.

Please amend paragraph [00574] as follows:

[00574] As shown in FIG. 2A, vRNAP contains the sequence ~~Rx_3Kx_6YG~~ $Rx_3Kx_{6-7}YG$ (SEQ ID NO:45), designated Motif B in the Pol I and Pol α DNA polymerases and the T7-like RNA polymerases. To determine the relevance of this motif to vRNAP activity, two mutants K670A and Y678F (SEQ ID NO:8) (position numbers in mini-vRNAP) were constructed by site-specific mutagenesis of mini-vRNAP. These two positions were chosen because, in T7-like RNA polymerases, the lysine is involved in nucleotide binding and the tyrosine in discrimination against deoxynucleoside triphosphates (Maksimova, et al., Eur. J Biochem. 195:841-847, 1991; Bonner, et al., EMBO J. 11 :3767-3775, 1992; Osumi-Davis, et al., J. Mol Biol. 226:37-45, 1992). The His-tagged Y678F mini-vRNAP gene (SEQ ID NO:7) differs from that of the mini-vRNAP domain sequence (SEQ ID NO:3) at two positions: nucleotide 2033 (A) was changed to a T, and nucleotide 2034 (T) was changed to a C.